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EXAMINER	
TSEGAYE, SABA	
ART UNIT	**PAPER NUMBER**
2662	

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/084,414	KWAK, JOSEPH A.	
	Examiner	Art Unit	
	Saba Tsegaye	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,24 and 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,24 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed on 2/18/05. Claims 1-12, 24 and 25 are pending. Currently no claims are in condition for allowance.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman, 11* F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In *re Longi,* 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum,* 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel,* 422 F.2d. 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321 (c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-12, 24 and 25 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 and 10 of copending Application No. 10/084,043. Although the conflicting claims are not identical, they are not patentably distinct from each other because broadens the scope of the claims 1-6 and 10 of the copending Application by eliminating the elements and their functions of the claims. It has been held that the omission an element and its function is an obvious expedient if the remaining elements perform the same function as before. *In re Karlson,* 136 USPQ 184 (CCPA). Also note *Ex parte Rainu,* 168 USPQ 375 (Bd.App. 1969)) omission of a reference element whose function is not needed would be obvious to one skilled in the art.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

4. Claims 7, 8, 11, 12 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm et al. (US 6,208,663) in view of Malkamaki et al. (US 6,735,180) and Fong et al. (US 6,760,860).

Regarding claims 7 and 25, Schramm discloses, in Figs. 3 and 5, a physical automatic request repeat apparatus employed by a subscriber unit, comprising: a transmitter having (RBS 22): means for receiving data (a radio base stations 22); means for formatting the received data into packets for transmission to the receiver, each packet having a particular encoding/data modulation (a radio base stations 22; column 5, lines 46-58); means for transmitting the packets (column 5, lines 25-45); means for retransmitting a packet, if an acknowledgment for that packet

is not received (column 7, lines 39-53); means for collecting retransmission statistics (column 7, lines 1-13); and means for adjusting each particular data modulation using the collected retransmission statistics (column 7, lines 1-38); and a receiver having (MS 12); means for receiving packets (MS 12)); means for decoding and error checking each received packet (column 5, lines 46-column 6, line 11). Further, Schramm discloses that the ARQ protocol is the RLC layer. An LLC frame to be transmitted by RBS is segmented into RLC blocks then transmitting the blocks to the mobile station through the physical layer (data is received from a higher layer ARQ mechanism).

Schramm does not disclose that data is formatted by a physical layer transmitter and generating an acknowledgment at the physical layer.

However, a physical layer ARQ mechanism is well known in the art. Malkamaki teaches a fast feedback scheme for a fast physical layer hybrid ARQ for data transmitted in the downlink direction. Further, Malkamaki teaches that one way to speed up the whole process is to generate the feedback data in **physical layer** of the receiver. Similarly of the transmissions should be generated at the **physical layer** of the transmitter (column 1, lines 54-60).

Fong teaches a dual ARQ type arrangement (see Fig, 2 and abstract), which is layer 1 and layer 2 both support ARQ operation. Layer 1 (physical layer) ARQ operations work in cooperation with layer 2 (higher layer) ARQ operations to avoid unnecessary retransmission (claimed the physical layer ARQ mechanism operates transparently with respect to the higher layer ARQ mechanism).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Schramm's ARQ method to incorporate the teachings from Malkamaki of a

physical layer ARQ mechanism and a dual type arrangement from Fong, the motivation being that the ARQ system will be more reliable by eliminating any long delay between the higher layer and the physical layer.

Regarding claim 8, Schramm discloses the base station wherein the particular encoding/data modulation is forward error correction FEC encoding /data modulation (column 7, line 54-column 8, line 11).

Regarding claim 11, Schramm discloses the base station wherein the acknowledgments are transmitted on the fast feedback channel using a CDMA air interface (column 4, lines 49-56).

Regarding claim 12, Schramm discloses the base station apparatus whereby said means for generating generates a negative acknowledgment, if that packet has an unacceptable error rate (column 7, lines 39-45).

5. Claims 1, 2, 5, 6 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sipola (US 6,529,561) in view of Schramm (US 6,208,663) and further in view of Malkamaki (US 6,735,180) and Fong (US 6,760,860).

Regarding claims 1 and 24, Sipola discloses, in Figs. 2 and 5, a base station implementing physical layer automatic request, including a transmitter (260) and a receiver (264), the base station comprising:

a physical layer transmitter for receiving data (270), formatting the received data into packets, each packet having a particular encoding/data modulation, transmitting the packets (202, 204) (column 10, lines 7-15; steps 500, 502), and retransmitting packets in response to failure to receive a corresponding acknowledgment (234) for a given packet (column 10, lines 16-28);

an ACK receiver for receiving the corresponding acknowledgment (step 5104 column 7, line 60-column 8, line 3); and

a physical layer receiver for demodulating (2 10) the packets (column 10, lines 29-40);

a combiner/decoder (222, 218) for buffering, decoding and detecting packet errors (step 516; column 10, lines 54-60); and

an acknowledgment generator (224) for generating an acknowledgment for each packet, if that packet has an acceptable error rate (step 510; column 7., line 6o-column 8, line 3).

However, Sipola does not expressly disclose collecting retransmission statistics and adjusting each particular encoding/data modulation using the collected retransmission statistics (as in claim 1); and a CDMA air interface (as in claim 5).

Schramm teaches that the radio base station RBS 22 counts the number of requests for retransmitted blocks and use alternative FEC coding and/or modulation scheme when the counted number of erroneously transmitted blocks exceeds some predetermined threshold (column 7, lines 1-12).

It would have been obvious to one ordinary skill in the art at the time of the invention was made add a collecting retransmission statistics method, such as that suggested by Schramm, in the method of Sipola in order to reduce the probability that the retransmitted block is received erroneously and improve overall system performance (column 4, lines 3-11).

Sipola and Schramm disclose that the ARQ protocol is the RLC layer. An LLC frame to be transmitted by RBS is segmented into RLC blocks then transmitting the blocks to the mobile station through the physical layer (data is received from a higher layer ARQ mechanism).

Sipola in view of Schramm does not expressly disclose that data is formatted by a physical layer transmitter and generating an acknowledgment at the physical layer. However, physical layer ARQ mechanism is well known in the art.

Malkamaki teaches a fast feedback scheme for a fast physical layer hybrid ARQ for data transmitted in the downlink direction. Further, Malkamaki teaches that one way to speed up the whole process is to generate the feedback data in **physical layer** of the receiver. Similarly of the transmissions should be generated at the **physical layer** of the transmitter (column 1, lines 54-60).

Fong teaches a dual ARQ type arrangement (see Fig, 2 and abstract), which is layer 1 and layer 2 both support ARQ operation. Layer 1 (physical layer) ARQ operations work in cooperation with layer 2 (higher layer) ARQ operations to avoid unnecessary retransmission (claimed the physical layer ARQ mechanism operates transparently with respect to the higher layer ARQ mechanism).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Sipola in view of Schramm's ARQ method to incorporate the teachings from Malkamaki of a physical layer ARQ mechanism and a dual type arrangement from Fong, the motivation being that the ARQ system will be more reliable by eliminating any long delay between the higher layer and the physical layer.

Regarding claim 5, Schramm teaches an ARQ techniques use an alternative modulation/coding scheme using FDMA and CDMA air interface wherein the acknowledgments are transmitted on a fast feedback channel.

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use CDMA, such as that suggested by Schramm, in the radio transmission system of Sipola in order to minimize interference and to increase the capacity data throughput.

Regarding claim 2, Sipola discloses the base station wherein the particular encoding/data modulation is forward error correction FEC (column 2, line 29-37).

Regarding claim 6, Sipola discloses the base station whereby the acknowledgment generator transmits a negative acknowledgment, if any packet has an unacceptable error rate (column 7, line 60-column 8, line 3).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schramm in view of Malkamaki and Fong as applied to claim 7 above, and further in view of Agee (US 6,128,276).

Schramm view of Malkamaki and Fong discloses all the claim limitations as stated above except for: the packets are transmitted using an OFDMA air interface in which frequency sub channels in an OFDMA set may be selectively nulled.

Agee teaches a radio communication method that is compatible with discrete multiple tone and orthogonal frequency-division multiplex-like frequency channelization techniques (column 4, line 19-column 5, line 40).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to add a method that transmit packets using an OFDMA air interface, such as that suggested by Agee, in the method of Schramm in view of Malkamaki and Fong in order to allow stationary and linear channel distortion to be modeled as an exactly multiplicative effect on the transmit spreading code.

7. Claim 10 is rejected under 35 U. S. C. 103(a) ms being unpatentable over Schramm in view of Malkamaki and Fong as applied to claim 7 above, and further in view of in view of Birru (US 2002/0037058).

Schramm in view of Malkamaki and Fong discloses all the claim limitations as stated above. Further, Schramm discloses that the invention is applied to all types of access methodologies including FDMA, TDMA, CDMA and hybrids thereof (column 4, lines 49-56).

However, Schramm does not expressly discloses wherein the packet are transmitted using a single carrier having a frequency domain equalization (SC-FDE) air interface.

Birru teaches that a multi-standard demodulator, which includes COMM, a frequency domain equalizer for single carrier results in a cost-effective solution compared to a time domain equalizer.

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use SC-FDE, such as that suggested by Bin-u, in the multi-access methodologies of Schramm in order to provide cost effectiveness and multi-path performance (0059).

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sipola in view of Schramm, Malkamaki and Fong as applied to claim 1 above, and further in view of Agee.

Sipola in view of Schramm, Malkamaki and Fong discloses all the claim limitations as stated above except for: the packets are transmitted using an **OFDMA air** interface in which frequency sub channels in an OFDMA set may be selectively nulled.

Agee teaches a radio communication method that is compatible with discrete multiple tone and orthogonal frequency-division multiplex-like frequency channelization techniques (column 4, line 19-column 5, line 40).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to add a method that transmit packets using an OFDMA air interface, such as that suggested by Agee, in the method of Sipola in view of Schramm, Malkamaki and Fong in order to allow stationary and linear channel distortion to be modeled as an exactly multiplicative effect on the transmit spreading code.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sipola in view of Schramm, Malkamaki and Fong as applied to claim 1 above, and further in view of Birru (US 2002/0037058).

Sipola in view of Schramm, Malkamaki and Fong discloses all the claim limitations as stated above. Further, Schramm discloses that the invention is applied to all types of access methodologies including FDMA, TDMA, CDMA and hybrids thereof. However, Sipola in view of Schramm, Malkamaki and Fong does not expressly discloses wherein the packet are transmitted using a single carrier having a frequency domain equalization (SC-FDE) air interface. Birru teaches that a multi-standard demodulator, which includes COMM, a frequency domain equalizer for single carrier results in a cost-effective solution compared to a time domain equalizer.

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use SC-FDE, such as that suggested by Birru, in the multi-access methodologies of Sipola in view of Schramm, Malkamaki and Fong in order to provide cost effectiveness and multi-path performance (0059).

Response to Arguments

10. Applicant's arguments with respect to claims 1-12, 24 and 25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saba Tsegaye whose telephone number is (571) 272-3091. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://paii--direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ST

May 9, 2005

JOHN PEZZLO
PRIMARY EXAMINER